

Economic Growth Opportunities in Agribusiness: An Overview of the Cassava, Rice and Oil Palm Sectors in the Wassa East and Prestea-Huni Valley Districts of the Western Region of Ghana



Palm Nut, Western Region, Ghana, June 2018 (Photo Cred : WAGES)

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Acronyms

BAC – Business Advisory Centre

CECI – Centre for International Studies and Cooperation

CSIR – Council for Scientific and Industrial Research

CSR – Corporate Social Responsibility

FFA – Free Fatty Acid

FOA – Food and Drugs Authority

GOG – Government of Ghana

GSA – Ghana Standards Authority

HQCF – High Quality Cassava Flour

IFAD – International Fund for Agricultural Development

MOFA – Ministry of Food and Agriculture

NBSSI – National Board for Small Scale Industries

OPRI – Oil Palm Research Institute

PHVD – Prestea-Huni Valley District

REP – Rural Enterprise Program

WAGES – West Africa Governance and Economic Sustainability in Extractive Areas

WED – Wassa East District

WUSC – World University Service of Canada

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1. Background and objectives of the study

The West Africa Governance and Economic Sustainability in Extractive Areas (WAGES) is a six-year project implemented by a consortium of the World University Service of Canada (WUSC) and the Centre for International Studies and Cooperation (CECI). The project focuses on local governance and sustainable and inclusive economic growth based on knowledge-sharing on best development practices in mining areas. The mandate of WAGES falls within the context of the AGCEDE/WAGES project, which operates in mining areas in three countries; Guinea, Ghana and Burkina Faso. In Ghana, the project is being implemented in the Prestea-Huni Valley and the Wassa East Districts of the Western Region. The project will identify and focus on the development of key economic subsectors within the two districts through an inclusive market systems approach.

This study was commissioned to assess agro-economic opportunities in the project districts and identify sectors that could serve as growth poles for economic development for the WAGES project and its partners in Ghana. The consultants were tasked to make recommendations on how the identified sectors could be developed as alternative livelihood sources to facilitate diversification from mining-based livelihood systems. Specifically, the study was mandated to analyze the potentials and challenges facing agri-food sectors (including fisheries and forest products) in the intervention areas of the three countries, explore options for expanding production, processing and marketing within these sectors to create jobs and income generation opportunities for women and youth in particular.

The research team included an international consultant who was mandated to work closely with the WAGES Economic Development Specialist, and a national consultant mandated to carry out preliminary research, identify and prioritize sectors, and work with the international consultant to engage with actors and institutions responsible for economic development at the local and national levels. The second part of the mandate of the international consultant was to work collaboratively with the national consultant to conduct in depth analysis of key agro-economic sectors using data and information collected by the national consultant in the preliminary phase.

1.1 Overview of Agriculture and Economic Development in the Project Districts

The Wassa East District (WED) and the Prestea-Huni Valley District (PHVD) are similar in almost every indicator of economic development including resource endowment, weather and climatic patterns, and livelihood systems. Both districts have significant gold deposits and thus experienced what is often referred to as the mining boom for the greater part of the last century. Prestea-Huni Valley and Wassa East Districts host five industrial mines and variants of regulated and unregulated small to medium scale mining activities. The mining boom in the two Districts has come at a cost though. Mining has over the years out-competed agriculture for land, labour, and even capital. A significant proportion of the youth engaged in small-scale gold mining known locally as "galamsey" mostly do not avail themselves of employment opportunities in other

sectors. A number of water bodies have been polluted and agricultural land degraded or lost due to spillage of cyanide and mining-related earth moving activities.

The two districts are located in the Rain Forest Zone characterized by a wet equatorial climate and two rainy seasons, a major season from March to July and a minor from September to November. Despite the emergence of a thriving mining-driven economy that served as a catalyst for infrastructural and socio-economic development, agriculture remains the main source of livelihood in many of the communities, employing over 70% of men and women. Two distinct forms of agriculture are evident in the districts—high efficiency large scale commercial plantation farms and low efficiency subsistence agriculture characterized by use of traditional production technology.

The main cash crops in the project area are cocoa, oil palm, and rubber. Cocoa is mostly cultivated by smallholders and in rare cases, medium-sized plantations established by settler farmers. Large-scale plantation oil palm is a common feature of the oil palm sector dominated by oil palm exporting multinationals like SOCFINAF in WED or Golden Star Mines who have established plantations for local people as part of their Corporate Social Responsibility (CSR) and community development programs in both Districts. Large-scale oil palm plantations have also been established by entrepreneurs who either sell nuts directly to processing companies or have their nuts processed for a fee by medium scale mills within the region. Gender definition of roles in agriculture are not entrenched even though men tend to dominate cash crop production while women mostly engage in food crop production, small-scale agro-processing, and distribution mainly to local markets. The high concentration of women in food crop production and low value agro-processing activities are the reasons for relatively higher levels of poverty among women.

2. Methodological Approach

2.1 Selection of Economic Sectors

A participatory and actor-centered methodology was adopted to allow for local input into the identification of economic sectors and mapping of stakeholders to support in the implementation of the project. The national consultant, working with the Business Advisory Centre (BAC), WAGES interns and the Economic Development Specialist for WAGES engaged stakeholders to seek their input in the identification and prioritization of economic sectors in the project area with the potential to create employment and sustainably support a meaningful livelihood for women and youth.

The consultation processes were concluded with validation workshops in both districts where all actors and stakeholders prioritized the sectors based on a 7-point criteria and other relevant local context parameters. The criteria were designed to allow participants undertake a comparative evaluation of five productive sectors and rank them in order of relevance and

feasibility. Each sector was evaluated based on the extent to which the factors measured by criterion applied to the sector. The criteria captured the following:

1. Access to inputs of production, equipment suppliers and potential for value addition
2. Current levels of women and youth participation as well as the potential for future inclusion of women and youth
3. Potential for economic growth and job creation
4. Relative competitiveness of district productive units/sectors within the region, other regions within Ghana and the West African Sub-region and internationally
5. Environmental resilience to climatic changes of the sector
6. State, donor and civil society support to sector including policies, subsidies and reliefs, investments, technical and advisory services support
7. Organization and structure of the production and marketing process

The most performing/feasible sector was to be awarded the highest score of 5 points with the least feasible scoring 1. A score between 4 and 2 was to be indicated for sectors with relatively moderate to low feasibility.

2.2 Sector and Agri-food Value Chain Analysis

The methodology for analysis of agri-food sectors and value chains in the WAGES area is a process involving:

- Review and description of key elements of the selected sectors
- Analysis of potential and feasibility of the selected sectors using the business environment analytical framework—the four pillars of competitiveness

Description of Key Elements of the Selected Sectors

Economic sectors are made up of actors, roles and linkages, or networks. These actors and relationships must be understood before any meaningful analysis into the relevance and potential within a sector can be undertaken. Our preliminary analysis would provide an overview of each of the selected sectors to highlight:

- The potentials within the sectors
- The categories of actors and their position in various linkages within the sectors

The degree of inclusiveness in sectors and markets vary across sectors and this needs to be understood in order to explore options for promoting sustained inclusiveness. Inclusive market systems are those that engage and benefit a range of actors including the poor, women, youth and other marginalized groups often excluded—or even exploited—by traditional market systems. In inclusive market systems, such actors are able to acquire access to the opportunities, skills and resources to upgrade, and the capabilities to engage with and influence these systems to reap the benefits that arise from the upgrading process. The criterion for evaluating inclusive markets is presented in Table 1. The criterion which is integrated in the

analytical framework uses three indicators. The indicators which also serve as guide for information needed to analyze the main criteria used in the **inclusive market approach** include **opportunity** (do sub-sectors have opportunities for growth, income and employment?); **relevance** (do sub-sectors respond to the needs and aspirations of women and youth?); And **feasibility** (is the change possible in the context of a volunteer program?). Table 1 shows analytical sub-criteria associated to each main criterion.

Table 1- Criteria for in Inclusive Market Analysis

Key evaluation criteria/examples of Sub-Criteria		
Opportunities	Feasibility	Relevance
Demand and growth of the market Competitiveness Potential for generating employment Potential for creating income and wealth	Vertical and horizontal links Stakeholders organization Infrastructures Support from the government or donors	Potential for value added Endorsement / sustainability of living conditions Position of women Position of youth

Source: Uniterria and Market Share Associates

Business Environment Analytical Framework

The analytical framework of sectorial competitiveness

To analyze the performance of agri-food sectors, FLC used an analytical framework based on four pillars of sectorial competitiveness. Our methodology draws from works by Ernst&Young in the French Agri-food sector (see table 2). The framework enables us to study the main elements of the business environment that have a positive or negative impact on the development of a specific industry. The framework also allow us conduct a position audit of elements within each pillar to identify the key strengths and weaknesses that can affect the sectors in the short, medium, and long-term. An environmental scan within the framework of the four pillars allows for the identification of challenges and development opportunities. The information and knowledge generated through this approach are subsequently analyzed to identify priority actions to be implemented in order to achieve an efficient and sustainable sector. It is important to emphasize that the general weakness within a single pillar, if not taken into account may eventually spillover to the other pillars and affect the development potential of the sector in general.

The analytical field and framework are complementary in that while the first provides the boundary for the analysis and a picture of the sub-sectors and actors, the second offers a methodology for developing a data collection and analysis grid to for identification of promising sectors and for developing strategic recommendations to support development. Value chains

in the three selected sectors will be analyzed within the framework of these four pillars outlined as follows:

- **Pillar A** comparatively explores development of the sectors by assessing production and support for production, processing and growth opportunities in both production and processing. In order to understand the functioning of any sector it is important to know who are the players and what services or products exist in the sector. In the case of the WAGES project, the position of women and youth as players in the sectors and their access to factors of production including land, equipment, technologies and storage.
- **Pillar B** focuses on describing the marketing and product supply systems, relationships between producers and suppliers, general description of main market players and their operation (wholesalers, middlemen, retailers, importers, exporters, etc.) number, market power, size of businesses destination of products, market structures and location of main buyers (in area, outside area), etc. Describing the market also entails highlighting the range of products, competition both locally and from importation, integration of women and youth, current and potential growth opportunities.
- **Pillar C** is concerned with issues relating to top-down coordination. This entails description of associations within the sector and their roles in the sector, description of the methods of coordination, description of the role of women and youth and possible leadership for women and youth.
- **Pillar D** The focus under this pillar is on identifying and describing government policies and programs for developing the sectors and women and youth. Programs and activities of NGOs, quasi-governmental institutions relevant to the sectors and women and youth are also explored. Government support also entails the provision of technical and advisory services, financial intermediation and policies to support women and youth integration and autonomy.

Table 2- Business environment analytical framework as per the four pillars of competitiveness and examples of evaluation indicators

Pillar A: Production and processing	Pillar B: Market
<ul style="list-style-type: none"> • Production support <ul style="list-style-type: none"> ✓ General description of main players ✓ Presence of players and services in the area ✓ Farmers, women and youth's access to production factors (inputs, equipment, technologies, buildings, storage, etc.); ✓ Price competitiveness. • Production: farmers, producers, land owners, women and youth <ul style="list-style-type: none"> ✓ General description of main players ✓ Information on production for each sector of interest, if available for the area: <ul style="list-style-type: none"> • Statistics on changes in surface area and size of farms (surface area, number of heads), number of farms and farmers, yield, average size of farms; • Land ownership and access to land; • Other socio-economic information on farmers (ages, gender, education, etc.) and professionalization; • Description of the importance, role and integration of women and youth in the sector; • Current and potential employment; • Resilience to climate change; • Environmental impacts. • Processing: <ul style="list-style-type: none"> ✓ Description of players, roles, number, market power, sector structure, size of businesses, destination of products, location of players (in area, outside area), market power; ✓ Technological description of the sector (slaughter / processing, cold chain, packaging, etc.); ✓ Description of the importance, role and integration of women and youth in the sector; ✓ Current and potential employment; <p>Growth opportunities in production and processing</p>	<ul style="list-style-type: none"> • Marketing structure <ul style="list-style-type: none"> ✓ Description of marketing systems ✓ Products provision system, if applicable ✓ Pricing methods ✓ Description of the relationship between producers and first buyers; • The market, marketing and distribution of products <ul style="list-style-type: none"> ✓ Description of the operation of the market, marketing and distribution of products from the farm to first buyers and then to consumers <ul style="list-style-type: none"> • General description of main players and operation (wholesalers, middlemen, retailers, importers, exporters, etc.) number, market power, size of businesses destination of products, market structures and location of main buyers (in area, outside area), etc. ✓ Range of products offered ✓ Competition and imports ✓ Description of the importance, role and integration of women and youth in the sector ✓ Current and potential employment opportunities for women and youth in marketing and distribution ✓ Competition from other regions and imports; ✓ Export markets; • Market Development Collective Strategy <p>Growth opportunities in demand and markets</p>
Pillar C: Mode of organization within the sector	Pillar D: Support to the development of the sector
<ul style="list-style-type: none"> • Top-down Coordination <ul style="list-style-type: none"> ✓ Development vision ✓ Description of the main professional associations (role in the sector, number, power of influence, financial autonomy, local vs. national positioning, etc.); ✓ Description of the method of coordination of the sector and/or inter-professions: links between elements, presence of contractual integration or others; ✓ Description of the importance, the role and integration of women and youth in key coordinating bodies; ✓ Possible leadership and inclusion of women and youth within these organizations. 	<ul style="list-style-type: none"> • Policies and governmental programs <ul style="list-style-type: none"> ✓ Description of government policies and programs to ensure the development of the sector, women and youth; ✓ Support from projects or NGOs; ✓ Governmental or quasi-governmental institutions supporting at local, regional and national levels ✓ Regulation and impacts on the development of the sector, women and youth; ✓ Training and research centers and impacts for the sector, women and youth; ✓ Supervision and advisory services (veterinary technician, etc.); ✓ Access and challenges to access for women and youth; youth and promote their integration and autonomy.

Source: Ernst&Young, adapted by Forest Lavoie Consulting

2.3 Data Collection and Stakeholder Consultations

Selected indicators for the Competitiveness Analytical Framework and the Inclusive Market Approach were used to develop the information collection grid to complement the data collected by the national consultant and to document the business environment analysis of studied sectors.

Ultimately, identification of the sectors is carried out using an analysis grid developed using the tools of the inclusive markets approach and the business environment analytical framework—the four pillars of competitiveness. Based on findings from our analysis, recommendations will be made for development of a viable economic market.

As part of the consultation processes, the consultants interacted with a wide range of stakeholders and actors in several economic sectors and commodity value chains in the two districts. In both Prestea-Huni and Wassa East Districts, interviews and group discussions were organized with Directors and Heads of decentralized Departments including the Ministry of Food and Agriculture (MOFA), BACs, District Planning Office, Stool lands, Environmental Health and Rural Development Departments of the District Assemblies. Under Ghana's decentralized governance setup, these stakeholders are responsible for coordinating government programs and providing support services to create a conducive environment for economic growth and development. The consultations also involved meetings with actors in the various commodity value chains including crop out-grower associations, associations of artisanal agro-processors and large-scale agricultural and mining companies. Because the facilitation of agribusiness development for smallholders would require capacity development and skills training, we explored the area for institutions that can provide technical support and skills training. We held consultations with government agencies like the National Board for Small Scale Industries (NBSSI) and the Council for Scientific and Industrial Research (CSIR), these agencies could support the project in the provision of skills training and development of technology adapted to the needs smallholders. At the local level, we visited the Asuanzi Farming School in the Central region, an institution with programs that could be adapted to the needs of women and youth smallholders.

3. Analysis of Selected Agri-food Sectors

This section of the report presents detailed analysis of the selected sectors using the methodology outlined in Section 2. We present the findings and draw conclusions based on information gathered through stakeholder consultations and explore options for development of markets within the sectors. The section is divided in two parts. The first part present findings of the first phase of this research which was to identify and prioritize agro-economic opportunities in the two districts. The second part highlights findings of sectorial and value chain analysis from the perspectives of the sector competitiveness framework and inclusive market approach.

3.1 Selection of Economic Sectors

Three sectors; cassava, oil palm and rice were selected through a consultative process in the first phase of the market research and value chain analysis. Participants were given scorecards containing the five sectors identified during consultations and the criteria for comparative evaluation of the sectors. Based on scores of the participants, we selected three most feasible sectors for in depth value chain analysis in the second phase. Weighted¹ average scores based on the 7-point criteria show oil palm and cassava sectors to be the most feasible and best performing. As indicated in the Section 2, the highest performing or most feasible sector was to be awarded the highest score of 5 points with the least feasible scoring 1. A score between 4 and 2 were to be indicated for sectors with relatively moderate to low feasibility.

Oil palm and cassava are the two most preferred crops in both Districts. The only difference is that oil palm is preferred ahead of cassava in the PHVD. In WED, stakeholders ranked cassava 1st with a composite score of 3.1 followed by oil palm and rice at 3.0 respectively. Vegetable cultivation was the ranked lowest at 2.7. The composite scores in PHVD were relatively more diverse. The top three ranked crops, oil palm, cassava and rice were allocated 3.3, 2.5 and 2.2 respectively. Although cassava and oil palm emerged as the most feasible sectors based on our criteria, the absence of clear consensus in the scores across indicators is indicative of inherent weakness in the sub-sectors and the fact that emphasis should be placed improving the key attributes of the sectors as measured by the indicators. Inclusiveness of women and youth is moderate with average composite score of about 3. Two other crops, bamboo, fish farming, and local poultry production were also mentioned as having potential to generate employment for women and youth even though these were not included in the ranking.

Table 3: Composite Scores Based on 7-point Criteria for Sector Selection

	Cassava	Oil Palm	Rice	Vegetables	Cocoa
Wassa East District	3.1	3.0	3.0	2.7	2.9
Prestea-Huni Valley District	2.5	3.3	2.2	1.8	1.7

3.2 Detailed Analysis of Agri-food Sectors and Value Chains

In conducting in depth analysis of the selected sectors, we will make reference to the methodology outlined in Section 2. We will use the inclusive market framework in figure 1 to analyze linkages between actors and their roles in the sectors.

¹ By the number of stakeholders that included the sector in their ranking.

For each sector, we will present the analysis in five sub-sections as follows:

- I. Overview of the sectors including the identification of the actors, actor roles and relationships and institutions. This analysis will be presented within the frame of the four pillars of inclusive markets.
- II. Key findings from the analysis;
- III. Main strengths, weaknesses, opportunities and threats and development challenges

The Rice Sector

The selection of rice as a potentially viable sector was not consistent with our expectations given that both districts are not known for rice production. Our strategy to engage a wide range of stakeholders and allow their inputs to inform our analysis perhaps led to the emergence of the rice as a potential growth sector.

The rice sector and value chain in the two districts is an emergent one. The Western region of Ghana is not a known rice production area and as a result, most of the institutions and rice production support systems are based in the northern and other parts of the country where rice production is relatively more intensive. Ghana as a country is heavily dependent on rice imports with an estimated import bill of over half a billion dollars annually. Despite growing concerns over quality, authenticity and health issues associated with imported rice, taste and demand for foreign rice is still high. The local rice sector struggles to compete with imported rice in pricing, packaging and even distribution, a challenge that has significantly hampered growth in the local rice sector.

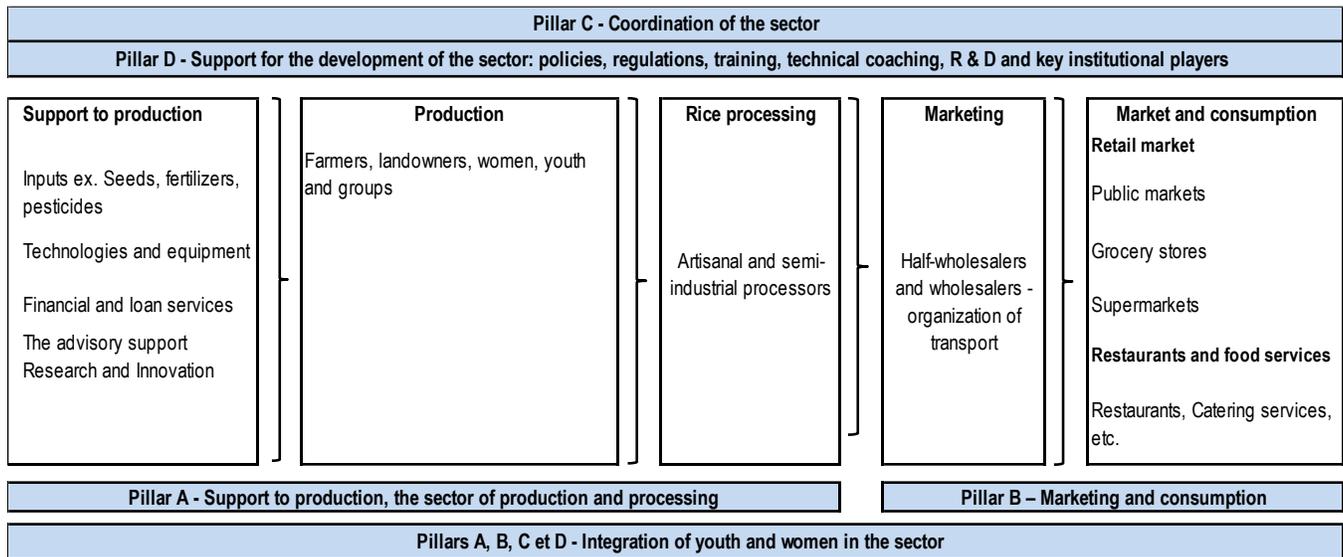
Rice production in the two districts is driven by relatively resilient local demand that is holding out against competition from imported rice. There are pockets of high demand areas in the Western region made up of ethical consumers and buyers impressed with the quality of rice processed locally. Because rice producers are few in both districts, the market appears underserved with producers not able to meet orders placed by local traders and individual consumers.

In the subsequent sections we will analyze rice production system in the study area using the four pillars of competitiveness framework.

- I. Overview of the sectors including the identification of the actors, actor roles and relationships and institutions. This analysis will be presented within the frame of the four pillars of inclusive markets.

Throughout our analysis, we will rely on the field of analysis shown in figure 1. This allows us to study all the links of the rice sector in the project area and to understand the interactions and possible effects on one or more links.

Figure 1 - Field of analysis of the rice sector



Source : Forest Lavoie Conseil

Pillar A – Production, Processing and Support Systems

Production

Support for the development of the rice sector in the two districts has been minimal despite knowledge of the potential for rice production. Support systems and investment, including those from government, non-governmental organizations (NGOs) and even the private sector have mostly focused on crops like cocoa, oil palm, rubber and to a limited degree, Cassava. What has emerged as the rice sector is the result of uncoordinated action by individual and youth groups seeking to tap into opportunities created by the existence of a rice processing mill and readily available swamps and valley patches suitable for rice production.

The producers are mostly youth and adult men and in rare cases women who cultivate swamps and other low lying areas. In the Prestea-Huni Valley District, the farmers are located along the Tarkwa-Aboso rail line or in Dompim in the case of the Wassa East District. Average farm sizes range from 0.5 -1 acre with yield levels hovering around 1.7 tons per acre. Even though farmers have knowledge of potential yield increases associated with the adoption of practices such as transplanting and proper farm sanitation, many do not apply this knowledge due to costs.

Key challenges in the rice sector is high costs of operations especially in aspects pertaining to land preparation, bird control (acquisition of nets) and drying platforms (tarpaulin).

The potential for growth in the sector exist through two types of intensification. One version increases in production per unit of inputs, and the others version utilizes large areas of land, but with minimal inputs and expenditures on capital and labor. Productivity per unit land can be increased through timely provision of support services like credit, land preparation support,

improved seed and advisory services. There are also large parcels of land suitable for rice production that could be developed to increase areas under cultivation.

The sector is already dominated by youth in production and options for further engagement of women could be improved with the development of processing and marketing aspects of the value chain.

The rice sector in the WAGES area is not a comprehensive value chain. The development of a value chain in the sector can be facilitated with support to improve complementary activities such as par-boiling, packaging, branding and pull marketing.

Support to production

Despite challenges with resources, the Department of Agriculture in both Districts provide support to rice production. The support systems are however not well structured and the delivery is not well coordinated. There is no certainty regarding any support service provided by governments and the timing of advisory services and input distribution do not reach farmers in good time. We observed that farmers receive occasional advisory services from MOFA however low extension staff/farmer ratios has resulted that both number of visits and contact hours is not adequate to allow for effective transfer of technology and resources.

Input and equipment

Access to inputs and equipment is crucial for rice production in both districts. The system of rice production in the study area involves the clearing of swamp and other wetlands located mostly in inaccessible areas. Costs and challenges associated with land preparation are the most limiting constraints in rice production in the area. Cost of land preparation is about 40% of the total cost outlay and farmers often have to pay upfront for land preparation. The high cost of land preparation is a challenge for women and youth inclusion in the rice production system. Land preparation equipment and support to farmers to enable them finance land preparation is not only key to growing rice production in the area it is a pre-requisite to facilitate women and youth inclusion. There are other constraints relating to input supply distribution:

- Access to land is and would become a key constraining factor without deliberate action to secure wetlands for women and youth. Chiefs and other state institutions including the District Assemblies and railways have plans to release wetlands for rice cultivation in order to create alternatives to illegal and mining. WAGES project and other stakeholders need to build on these overtures and advocate for the implementation of the plans.
- Prompt and reliable access to seed and pesticides remains a challenge. One factor driving the demand for locally produced rice in the two districts is the varieties cultivated by farmers. There is need to put in place safeguards to ensure farmers are able to acquire true-to-type varieties for planting.

- Supply of nets for protecting rice fields from birds is a challenge. The Inets are not readily available in the districts and those supplied through the MOFA have not been found to be of high quality.

Access to financing and credit

Access to credit remains the single most important constraint in agriculture. Even where commercial banks appear willing to provide credit support, the lending conditions have been stringent and unfavorable for smallholder systems. Credit facilities available to farmers are mostly project funds channeled through banks. We made the following observation in the Prestea-Huni Valley District in relation to credit:

- Through the MOFA and the District Assemblies, a credit facility has been provided in collaboration with a rural bank.
- The largely in-kind credit has an interest rate of 28% which is somehow high given the scale and system of production used by the farmers.
- Inputs provided through the credit such as support in land preparation, provision of seed and nets.

Processing, packaging and preservation

The rice system in the project area is not a comprehensive value chain even though the potential for transforming it into a value chain exists. It is largely a single-actor system where the producer performs almost all the activities, from production, milling, bagging and marketing.

There is no effort to grade, brand and appeal to ethical and up-end consumers through packaging largely due to the high demand at the factory gate. The milled rice is mostly bagged in 50 kg bags and sold directly traders or individuals. Activities like par-boiling of rice which is known to add value is currently not performed.

Pillar B – Market

The objective of this pillar is to analyze the structure of marketing between producers and buyers, different market places for selling products, collective strategies for market development, current and potential roles of women and youth, competition, growth potentials, etc.

Structure and operations of the market

As indicated, the source of demand for rice in the area is local. Farmers produce rice, dry it, and transport it to the rice mills. In some few instances, market women come to buy paddy from farmers for milling and distribution to markets outside the region.

- Apart from market women who buy and distribute outside the region, all rice produced is sold within the region.
- Because buyers are always at hand at the mills to buy rice off farmers, options to develop market and distribution channels have not been explored.

- Except in instances where producers enter contracts to produce for particular traders who then act as distributors to major demand centers in other cities, there is no defined channel for distribution or structure of a market for rice in the districts.

Pillar C - Mode of organization within the sector

This pillar analyzes the capacity to coordinate and disseminate information within the sector. It focuses, among other things, on how various partners are organized, on business relationships between producers and buyers, the presence of a sectorial development strategy, the role and integration of women and youth within key coordination organizations, on possible women and youth leadership within these organizations, etc.

Organization within the sector

As indicated rice production and marketing in the project districts is relatively new. Knowledge of the system is evolving as actor roles and relationships are evolving further. It is expected that the National Consultant will focus a bit more time studying the rice system in the next phase of the market analysis. It is clear the production and marketing system in the district are farmer-led initiatives due to:

- There appears to be some form of organization at the level of production. Farmers in the Prestea-Huni Valley District have formed producer associations.
- Even though producer associations exist, production and marketing is still organized at the individual level. The association exists only to facilitate access to inputs and represent farmers in dealings with government agencies and NGOs.
- There is no coordination in processing and marketing by farmers. Buyers including market women deal with farmers individually—there is no evidence of collective bargaining and effort to influence prices. The role of women is limited to processing and marketing of rice produced by relations². The potential for growing the sector into a comprehensive value chain with development of processing and marketing activities is huge.
- The emerging up-end market for rice in the region is poorly understood and understudied. Vertical integration efforts programs cannot be developed without knowledge of end markets.

Pillar D – Support to the development of the sector

This pillar aims at analyzing the support and guidance provided to the sector to ensure its development and to innovate. It focuses, among other things, on government interventions and programs, development assistance, infrastructure, research expertise, training and more

² Mostly their husbands or youth children.

specifically, on programs, services and training that target women and youth and promote their integration and empowerment.

Policies and governmental programs

Support to production and related activities in the rice sector are not based on any medium to long-term strategy for development of the sector beyond its current level. Rice is not one of the traditional crops produced in the region despite its potential for employment and income generation.

- Its emergence as a viable economic growth sector is informed by earnings of early entrants to the sector. The credit support to farmers engineered through the Rural Enterprise Program (REP) and the rural banks was largely influenced by the significant returns farmers in the sector reported.
- Support provided to production is not based on any specific district or regional level program to promote growth of the rice sector but rather general support provided to farmers. It is important to stress that the absence of program or policy to support the sector is not in any way indicative of a lack of interest in rice.
- Stakeholders including District Assemblies have expressed the desire to invest resources to develop the sector once the potential is established and a business case made. The WAGES project could lead in the coordination of stakeholders by creating platforms for them to harmonize their strategies for sectors and pool resources where it is feasible to do so.

II. Key findings from the analysis

This section presents the main findings from the analysis of each pillar.

Pillar A – Production, processing and Support Systems

Support to production

- The support provided for the development of the rice value chain in the two districts covered by the project is below the minimum threshold even though the production potential and development opportunities for rice are known. Additionally, the ratio of advisers to farmers is very low.
- Advisory services provided by the government are underfunded and are significantly understaffed. Consequently, they cannot respond adequately to the important needs of producers and processors in terms of information, guidance and training. Additionally, they can hardly ensure a reliable supply of agricultural inputs (adapted seeds, fertilizers, pesticides and bird protection). This affects the development of rice farming in the districts as well as the profitability of the farms.
- Access to loans is very difficult. This is mainly due to the conditions and terms offered by financial institutions, and to farmer organizations and farmer reputations

of delinquent payers. This situation has important implications for the development of agriculture and particularly the value chains prioritized in this study. Additionally, this imposes enormous constraints on the increase of incomes, the intensification of yields, and the development of a sustainable sector.

- The supply of production inputs (seeds, fertilizers, pesticides, protective nets for birds, etc.) does not necessarily meet producer needs (distribution timing, choice of inputs, and prices). Support players such as input suppliers, government advisory services, and credit institutions could better coordinate their interventions and provide appropriate inputs to increase crop productivity.
- Access to inputs (seeds, fertilizers, pesticides protective nets for birds, etc.) and equipment (small equipment to facilitate work) is difficult due to the lack of availability of suppliers in the area, and from the financial constraints.
- Financial institutions sometimes dictate the choice of input or equipment suppliers and choose the input or equipment (e.g. bird net) without consulting their client. Producers do not have a balance of power to negotiate with loan institutions.

Production

- Rice producers are predominantly male and young males. The presence of female producers is exceptional. This could be increased by developing the processing and marketing sub-sectors of the value chain.
- Investment and operating costs are high in rice farming. High costs include land preparation (clearing, levelling, etc.), protection against birds, purchase of crop drying tarpaulin, etc. The costs and challenges associated with land preparation are an important constraint to the development of rice in the two districts and are a factor in the exclusion of women and youth.
- Non-ownership of land cultivated by groups and farmers is also an important constraint on improving land management. Terms of annual use of the land resource limit any medium- and long-term investment. In addition, the land tenure situation is a source of uncertainty for operators regarding future rental cost growth.
- The potential of rice cultivation in the region is an opportunity to engage youth in agriculture. However, the winning conditions must be met to divert the interest of this group for mining. Access to land, loan, inputs, training and guidance are some of the key conditions for success.
- Planting and harvest planning is an important issue, requiring secure and timely access to production inputs such as seeds (desired varieties), fertilizer, pesticides, protective nets, etc.

Processing

- Strong local demand for processed rice limits interest in the development of value-added rice products involving attractive branding and packaging.
- The needs of rice processing in the two districts seem to be filled by a few players. As production evolves, it will be necessary to ensure that ownership and control of the processing levers are not transferred into a form of vertical integration of production.
- The role of women in the rice value chain could be increased with the development of processing and marketing activities. This will require increasing production to meet strong local demand and then implementing actions to increase the added value of marketed products such as drying, packaging and brand creation, etc. Gradually, the strategy of increasing the added value could allow the groups of female processors to increase their profit on the sale of the products. To do this, women's groups will need to be supported and trained to consolidate their place and limit the risks associated with male competition over the control of processing and marketing activities.

Pillar B – Market

Structure and operations of the market

- The rice sector is in the emerging stage. The value chain is therefore underdeveloped and is not yet able to serve local markets.
- Rice distribution and marketing channels are basic since rice farming is at an emerging stage and production is barely able to meet local demand.
- Women involved in marketing operations are not grouped together and are poorly organized. A strategy should be developed to consolidate their role.
- At this stage, there is no collective market development strategy and structures involving the players involved in production and marketing. Implementation of rice marketing structure and strategy could allow small producers and processors to control marketing factors and maximize their profits.
- Regional and niche markets' needs (value added) and the effect of competition from imported products on markets are little known and little studied. It will be necessary to increase market knowledge based on the development of rice farming in the districts. There is often too much investment in production without considering the efforts to develop markets to sell agricultural products.

Pillar C - Mode of organization within the sector:

Organization within the sector

- The sectorial organization is limited to the presence of certain organizations active in rice production. A farmer association was established in the District of the Prestea-Huni Valley.
- No organization is active in coordinating the value chain and its development.
- Women play a marginal role in the sector and no organization specifically represents them.
- There is much to be done at this pillar to make farmer organizations functional and effective in the rice sector. The diagnosis of each group chosen by the project to be coached should allow the development of a strategy for training and support to organizational reinforcement that will be adapted to the needs of each group. The development of these groups should be guided by entrepreneurship, leadership enhancement and innovation issues.

Pillar D – Support to the development of the sector

Policies and governmental programs

- There is no medium or long run planning strategy, policy program to frame the development of the rice sector in the two Districts. Lack of human and financial resources for advisory services is creating a significant challenge
- Rice is not one of the traditional crops produced in the region despite its potential for employment and income generation
- Absence of program or policy to support the sector
- Stakeholders have expressed the desire to invest resources to develop the sector once the potential is established and a business case made
- Training of farmers and youth is possible and tailor-made training programs can be developed in partnership with the Asuanzi Farming School and Governmental technical services.
- Partnerships with the Food Research Institute are possible for transfer of technology relevant to rice processing in the districts.

III. Main strengths, weaknesses, opportunities and threats and development challenges

The table on the next page shows the main strengths, weaknesses, opportunities and development threats and challenges.

Diagnosis of the rice value chain in the project intervention area in Ghana

Strengths	Weaknesses	Challenges
<ul style="list-style-type: none"> • Prospects for yield and profitability of rice crops for farmers • Emerging of rice production in the region • Strong local demand for processed rice • Availability of land for rice farming 	<ul style="list-style-type: none"> • Inadequate supply and technical support to meet the needs of producers • Underfunding and shortage of manpower within Government coaching structures • Stringent loan conditions for purchases of inputs, equipment and land preparation • Difficult access to inputs (improved seeds, fertilizers, pesticides, etc.) • The inadequacy of inputs to producers' needs (distribution timing, choice of inputs and prices) • Lack of equipment and low mechanization of farming • The important run-up costs in production and the challenge of investing on sustainable land improvements without owning the land - land tenure • The predominant role of men in rice production • Poor knowledge and lack of training of farmers, women and youth on technical arrangements, management, processing, marketing and loan • The weak organization of players and groups of women in production, processing and marketing • An underdeveloped processing sector and an uncertain future regarding the real role of women • Rice distribution and marketing channels are still scarcely deployed • The absence of a collective structure for market development • Weak knowledge of markets and their needs (local and niches) • Lack of a collective sectorial coordination of the rice value chain 	<ul style="list-style-type: none"> • Improving the adequacy of technical coaching and support from government agencies (technology transfer and training) to increase yields and income from rice farming • Facilitating access to agricultural inputs and equipment • Promoting the gradual mechanization of production • Providing conditions for access to loan; Essential element to ensure the development of the sector • Facilitate the development of new rice perimeters • Solving land tenure issues • Creating interest among youth and women in the rice sector • Improving the integration of youth and women in the sector • Developing and implementing a strategy for strengthening farmers organizations • Identifying precisely women, youth and farmers needs in terms of training • Providing training adapted to women, youth and farmers involved in the rice sector in collaboration with partners in the field (technical services, district assembly) • Implementing a strategy to allow the emergence of a processing sector, locally operated by women • Providing women's organizations with efficient artisanal or semi-artisanal processing units • Improving knowledge of the market, its needs and its operation • Increasing market incomes for producers and processors • Improving the competitiveness of local rice versus imported rice

Diagnosis of the rice value chain in the project intervention area in Ghana

Opportunities	Threats	
<ul style="list-style-type: none"> • The rice sector at an emerging stage of development in the region • A potentially interesting sector for youth • Employment opportunities for women in the processing and marketing sub-sectors • Possible partnerships with research, training and technology transfer organizations • The support of mining companies in financing projects to support women and youth in production and processing 	<ul style="list-style-type: none"> • Lack of a government vision for the development of the rice value chain • Absence of a program or policy to support and guide the development of the rice sector • Strong presence of imported rice in markets and retail • Lack of resources allocated to the decentralized technical services for the fulfillment of their mandates for the supervision and distribution of inputs 	<ul style="list-style-type: none"> • Developing a vision for the development of rice at the regional level • Creating a regional coordination structure of the rice value chain made up of small farmers, processors and local marketers • Adapting the development of markets and marketing channels in line with the growth of production

The Cassava Sector

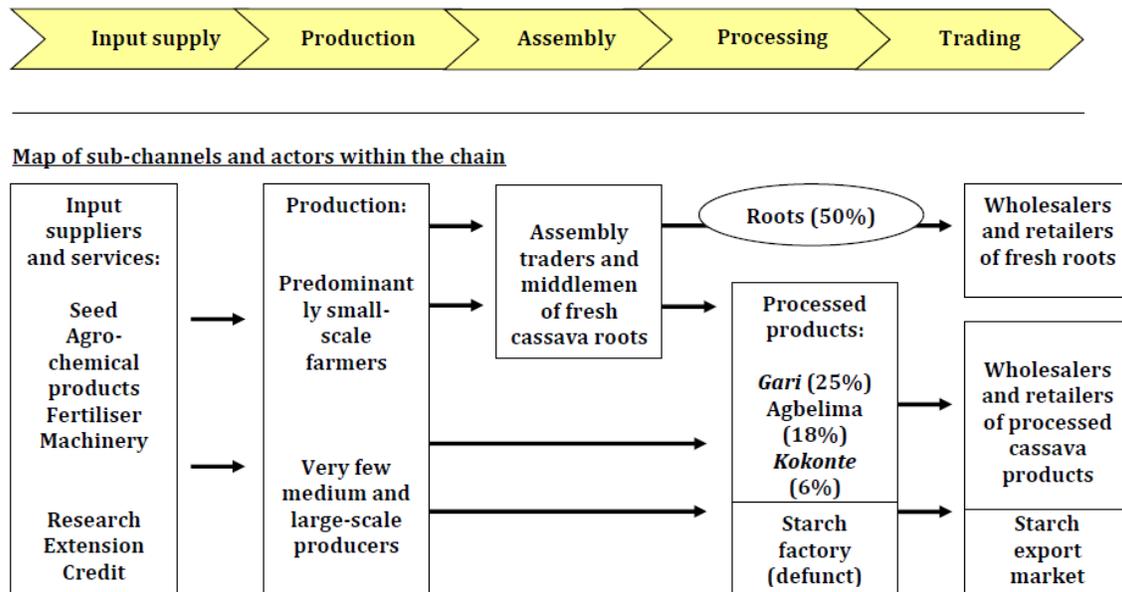
Cassava is one of the most widely cultivated crops in the two study Districts mostly as a staple crop. The decision to grow cassava by many households is driven largely by food security considerations rather than economic and profit objectives. Cassava has a comprehensive value chain which is known to many including women and youth. Cassava is known to have many products and by-products that should generate employment opportunities for those who engage in the activities of producing, processing and distributing such products and by-products.

Apart from being the basic ingredient in fufu, a widely consumed meal in both districts, cassava can be processed into other food products like gari, leaves stew, pizza, biscuit, ampesi, yakeyake, noodles, dough and cake. Medium and high end processing could further allow for the production of industrial starch, refined oil and several soap products. The importance attached to cassava by farmers and stakeholders has more to do with knowledge of potential uses of the crop and not necessarily based on earnings or livelihood derived from Cassava.

In general, the cassava value chain in Ghana is perceived as having five stages even though the actors and the functions are not exactly delineated as figure 2 portrays. The activities include input supply, production, assembly, processing and trading or marketing. The input market is dominated by private sector although input support programs for smallholders implemented by MOFA and NGOs exist. Production is dominated by smallholders with few medium and large scale producers. Bulking and distribution is one of the key challenges with the cassava value chain in Ghana due largely to the perishable nature of cassava and poor road networks linking largely inaccessible production areas. As a result the assembly function is mostly undertaken by traders and middlemen who buy mostly from small scale producers and supply to retailers of fresh roots or process into gari and other products. Medium and large scale producers supply their roots to SMEs in food processing and large starch factory. Even though export of starch has been muted, the fact that local production is unable to meet domestic demand has left the export market unexplored.

At the aggregate level, Ghana has huge unmet demand in industrial starch, HQCF and industrial-grade flour. The hard liquor industry, beer industry, confectionery industry, mosquito coil production, paper industry and poultry and animal feed industry all have unmet demand for HQCF, industrial grade flour and starch. Many policy makers and industry players see this huge unmet demand as an opportunity for economic growth and employment generation.

Figure 2: The Cassava Value Chain in Ghana



Source: C:AVA (2013)

- I. Overview of the sectors including the identification of the actors, actor roles and relationships and institutions. This analysis will be presented within the frame of the four pillars of inclusive markets.

We will discuss the cassava sector and related value chains using the value chain framework outlined in Section 2. The cassava value chain in the project districts fits perfectly within the general framework in Figure 2. The focus of our analysis in this section therefore is to highlight the nuances peculiar to the project area that would otherwise be overlooked in country wide analysis. The sector will be analysed using the four pillars for assessing business environment competitiveness as follows:

Pillar A – Production, processing and Support Systems

Support to production

Regarding support to production, similar findings apply to cassava as it was mentioned for rice, difficulties to access to credit and advisory services.

Production

Production of cassava is dominated by smallholder farmers who produce the crop as a staple. Gender roles in production of cassava are not entrenched so women who engaged mostly in activities relating to marketing and processing are now also intensively engage in cultivation.

Despite the huge potential of cassava, very little is earned from the crop besides its use as a food crop. The greater proportion of cassava produced in the WAGES districts is consumed either as fresh roots or processed into traditional products. We observed the following attributes about the production system:

- Much of the cassava in the project area and neighboring districts is cultivated on small farms, by smallholders cultivating marginal lands that are no longer able to support growth of crops such as maize.
- Production system is rain fed and relies on traditional farming methods. Fertilizer is rarely applied meaning yield levels are significantly below the attainable levels.
- There are few entrepreneurs engaged in large scale cultivation who also contract out-growers to produce cassava. These SMEs have medium scale processing systems that produce industrial grade cassava flour and press.
- Because the crop is a staple and has industrial potential there is considerable effort to support production, processing and marketing although without much success in the areas of processing and marketing. The Department of Agriculture in the District Assemblies have been supplying farmers with varieties of improved (mostly high starch content) cassava.

Processing

- The sector has a three-tier processing system. The top-tier is made of factories that produce cassava starch and supply to end users such as the breweries. The technology in this tier of processing is state of the art industrial scale factories costing millions of dollars.
- The middle-tier processing comprises individuals and small companies that produce cassava press and High Quality Cassava Flour (HQCF). Middle-tier processors produce for end markets like the breweries and local food processing companies for the production of what is known as "fufu powder" and related cassava based food products. Technology in the middle tier processing range from appropriate technology to medium scale factories.
- The third tier of processing is either traditional or artisanal and often leads to products like gari, cassava dough, "konkonte", tapioca and other locally consumed cassava-based food products. Third tier processing is the most dominant of the three tiers and employs mostly women using traditional or improvised local tools for processing.
- The goal of processing in the case of local women is to extend the shelf life of cassava because as roots, cassava is highly perishable.

Without viable pathways to harnessing the potential of cassava to increase smallholder farmer incomes and in the case of this project, the incomes of women and youth, the emphasis on the cassava value chain especially in its current structure offers little in terms of economic development. Women are typically found in low status activities and at the low returns end of the value chain.

Pillar B – Market

The objective of this pillar is to analyze the structure of marketing between producers and buyers, different market places for selling products, collective strategies for market development, current and potential roles of women and youth, competition, growth potentials, etc.

As a grain-free replacement for wheat, cassava flour is believed to have the potential to replace wheat flour in many products. HQCF can be used as a substitute for wheat flour with the potential for replacing upwards of 10% of wheat flour in pastries, cakes, biscuits, and doughnuts. The many uses of cassava mean that the market is segregated to a certain degree:

- **Industrial Demand** — The apex market is made up of breweries and confectionery bakers that rely on starch and high HQCF as raw material for production. The decision by end-users like Guinness Ghana to replace starch with HQCF and cassava means that industrial demand for cassava products in Ghana goes beyond the industrial starch that was produced by Ayensu Starch Factory in the Central Region. Returns to inputs and market margins are highest for those who supply the end market.
- **Middle Class Food Market** — In supermarkets and mini marts across the country, processed cassava products such as neat fufu flour and even gari is packaged and sold. The products in this market are hygienically packaged and labelled with Food and Drugs Authority (FDA) and Ghana Standards Authority (GSA) authentication stickers displayed. The target group in this market is that segment of the population that wants to enjoy cassava-based local cuisine but have concerns relating hygiene and food safety.
- **Local Market** — This is the base market with a wide range of products including raw tubers of cassava, cassava dough, gari, yakeyake, tapioca etc. Quality and prices are low with overturns barely enough to cover costs of production, processing and marketing.

In the case of high-end industrial and mid-level processors, the source of supply is a combination of out-grower schemes sponsored by the companies and cassava sourced from aggregators who buy from various production and transport to processing centers. Farmers have also in the past supplied directly to factories like Ayensu Starch however such arrangements have not been sustained because of operational difficulties with Ayensu and apparently due to low prices offered to farmers who opted to produce high starch content cassava demanded by the Ayensu starch factory. The lack of clarity on pricing coupled with uncertainty surrounding the operational feasibility of the Ayensu starch factory has all but eliminated the factory demand option for fresh cassava tubers.

Local markets in various town and villages are the main outlet for majority of women and youth who produce and process cassava. The main players in these local markets are women who sell cassava produced from their own farms or from other farmers. The pricing and measurement of cassava at the farm gate and local market is rather unorthodox. The buyer usually pays for a pre-determined dimension of a farm with cassava ready for harvest. After payment the buyer

hires labor to dig out the cassava. If the buyer is lucky and the farm is a high yield field he or she gains. If the yield is low the buyer loses. This system of selling has served as a disincentive for up-end and middle level markets that incidentally pay better prices.

The market for cassava can be improved in favor of many women who engage in the marketing if:

- standardization is introduced in marketing. There should be a way to determine quality and quantity and based on this, place value on the product. Such measures are required to attract industry and other middle-tier processing companies
- appropriate technology to improve handling after harvest in order to preserve quality and reduce post-harvest losses
- skills enhancement and appropriate technology to enable smallholders improve both the efficiency and quality of processing. This would allow artisanal processors to gain access to middle and up end markets

The cassava value chain in its current structure offers little in terms of economic development and more so for women and youth. Incomes from gari, cassava dough, cassava leaves and other locally processed food products are simply not adequate to provide a meaningful livelihood for women and youth. Opportunities for growth exist in the supply of products like cassava press, HQCF, high quality and better packaged products like dough, konkonte and even dried cassava. Such interventions have the potential to increase the range of products produced by artisanal processors, create new demand and also allow women gain access to the market served by middle tier processors.

Pillar C - Mode of organization within the sector

This pillar analyzes the capacity to coordinate and disseminate information within the sector. It focuses, among other things, on how various partners are organized, on business relationships between producers and buyers, the presence of a sectorial development strategy, the role and integration of women and youth within key coordination organizations, on possible women and youth leadership within these organizations, etc.

Coordination is key for women and youth inclusiveness in the sector. Vertical coordination in particular is necessary for improving incomes of women who are located at base of the value chain. Improving coordination in the sector may entail facilitating access to technological innovations that can significantly transform the productivity and incomes of women and youth even if they remained at the margins of the value chains.

- Coordination within the framework of the existing value chain is poor. One way to improve vertical coordination is through formation of cooperatives to increase the bargaining power of smallholders. Even though there are several producer and processor groups across the districts, they are poorly organized and mostly act independently.

- When producers have been organized and supported, it was so they could supply cheap quality raw material to factories. Upgrading and transforming smallholder processing systems has not been a priority for policy.
- Smallholder cassava production and processing groups lack the skills and equipment required to improve their products and productivity. Support including training provided to the groups has not brought about significant changes in the quality, quantity and range of products produced.
- Interventions including the establishment of industrial processing units are done within the framework of readily available and cheap fresh cassava. Smallholder earnings and what happen before and after the smallholder has supplied fresh cassava to the factory is after thought.

Pillar D – Support to the development of the sector

This pillar aims at analyzing the support and guidance provided to the sector to ensure its development and to innovate. It focuses, among other things, on government interventions and programs, development assistance, infrastructure, research expertise, training and more specifically, on programs, services and training that target women and youth and promote their integration and empowerment.

The focus under this pillar is on identifying and describing government policies and programs for developing the sectors as well as its policy towards women and youth empowerment.

The Government of Ghana (GOG), NGOs and the private sector have over the years demonstrated a commitment to develop the cassava sector by implementing several interventions:

- Root and Tuber Improvement and Marketing Program funded by the International Fund for Agricultural Development (IFAD) and the Government of Ghana were implemented between 2007-2014. The goal of the program was to enhance income and food security in order to improve livelihoods of the rural poor. The program strategies included support to increased commodity chain linkages; support to root and tuber production; upgrading of small-scale processing, business and marketing skills.
- The establishment of the Ayensu Starch Factory under a presidential special initiative was indicative of government's plans to develop cassava into a commercially viable industrial raw material.
- In 2015, The Export Trade, Agricultural and Industrial Development Fund approved an amount of about GH10 million for the implementation of Phase I of its Cassava Integrated Enterprise Development Project which aimed at large scale production and processing of cassava for industrial use and export. The objective of the project was to increase economic opportunities through sustainable and competitive cassava production, marketing and agro-enterprise development in Ghana. The project was to establish three factories at Ejura in the Ashanti Region, Kintampo in the Brong-Ahafo Region and Damongo in the Northern Region. The factories were expected to produce HQCF for the domestic market (to substitute for wheat imports

for flour) and for export. Over 1,200 out-growers were being supported to cultivate cassava in the three regions to feed the factories.

- Guinness Ghana, a leading brewery in Ghana installed capacity to produce alcoholic and non-alcoholic beverages from cassava. The factory acquired exclusive rights to off-take starch from the Ayensu Starch Factory in the Central Region. The company has also supported smallholders to produce raw material for processing cassava press and HQCF.
- NGOs and MOFA have been working with smallholder at the districts to supply improved coppice to farmers. NGOs in particular have been providing skills training and in some instances equipment to support gari processing by women.

Despite growing interest in cassava by government and civil society groups, the approaches adopted do not appear to support smallholders beyond serving as out-growers and suppliers of cheap raw material to factories. Inclusion of women and youth from an empowerment and income enhancing perspective cannot be achieved within the framework of existing policies. Inclusiveness is achieved when producers and local processors get fair share of the value. The appropriate strategy is to engineer value change for women and youth as they are facilitated to move up on the value chain.

II. Key findings from the analysis

This section presents the main findings from the analysis of each pillar.

Pillar A – Production, processing and Support Systems

Support to production

This situation has important implications for the development of agriculture and particularly on the value chains prioritized in this study. Moreover, this puts enormous challenges on the increase of incomes, the intensification of the yields and the development of a sustainable sector.

- As with rice, access to loans and advisory services is difficult.
- Loan rates are high and financial institutions have little confidence in producers. Financing for the purchase of production or processing equipment is therefore unavailable. When it is, the rates are very high. 26% was mentioned for a six-month loan.
- Production and processing remain under-equipped. This is due in part to the difficult access to loans.
- Governmental services are poorly funded and retiring employees are not replaced. Therefore, they cannot respond adequately to producers and processors vital needs for information, advice and training. In addition, they can hardly ensure a reliable supply of agricultural inputs, hampering the development of rice farming in the districts and the profitability of farms.

Production

- Cassava is an important crop in both districts and the level of production is relatively stable.
- Cassava is mainly produced to meet food security needs rather than for economic reasons. Farmers use few production inputs and the yields are not optimized.
- Women play an important role in production, processing and marketing. However, they must be supported and trained to consolidate their position and limit the risks associated with the vagaries of harvests and markets.
- Income from the farming and sale of cassava produce is low.
- The current structure of production-processing-marketing is of little interest to young people.
- Production is dominated by a large number of small producers and a small number of medium and large producers.
- The mode of marketing of privileged cassava where an agreement is reached on the value of the harvest of a field to be collected by the buyer constitutes an important challenge to accessing industrial and value-added markets. This practice presents a high degree of uncertainty as to the yield at the time of the transaction.
- The low level of technology used at the various stages of production and harvesting requires a high demand for manpower. The tasks are particularly tough and demanding during harvest.
- Small producers and processors lack skills and equipment, and the appropriate technology to improve products and increase the yields of production and processing processes is poor.
- Access to loans is difficult for farmers, processors and groups. This puts enormous challenges on increasing incomes, increasing yields and developing a sustainable and efficient chain.

Processing

- The industrial processing market is not accessible to small producers. They must turn to middlemen to add value to the cassava roots or the products they have processed.
- Aggregate demand for cassava starch for industrial processes is very high, but is difficult to meet given the structure of the production sector.
- Artisanal or semi-artisanal processing uses rudimentary technologies and is limited to the processing of raw materials where supply is relatively abundant.
- The presentation of processed products is basic and has little value in serving value-added markets.
- The structures of production and processing in their present forms offer little prospect of economic development for women and youth. Furthermore, there is little knowledge of how the possible combinations of processing technologies to meet industrial or consumer products demand could be adapted to the context of WAGES target group.

- However, the cassava value chain allows the processing of various ranges of products to supply different markets. There is a need to increase knowledge about the opportunities offered by this chain to better guide the development of cassava production and processing in the two districts.
- The role of women in the cassava value chain could be strengthened with the development of processing and marketing activities in new market niches. Following knowledge building and market opportunities, it will be necessary to implement a strategy to better position the products in higher value added segments in order to improve processors' profits on products sales. To do so, it is important that women groups are supported and trained to consolidate their place and limit the risks associated with male competition over the control of processing and marketing activities.

Pillar B – Cassava Market and Support to the Market

- Women play an important role in marketing cassava at the market level.
- Locally processed products are varied, but of low quality and marketed at low prices. Competition in local markets is sometimes very strong.
- There is no collective strategy and structure for market development involving the players in production, processing and marketing.
- Women's groups involved in marketing operations appear to be poorly organized and trained. In addition, they have little knowledge of the opportunities that markets can offer.
- Hygiene and sanitation during processing pose significant challenges.
- Supply aggregation and management of cassava distribution pose significant challenges given the perishable nature of the produce, transport distances, road conditions and the large number of small producers.
- Cassava products market can be divided into three main segments: industrial demand, foodstuffs for the retail market and raw material for the local market.
- Certain ranges of processed products such as cassava flour may be substitute for imported products such as wheat flour.
- To increase the income and interest of women and youth involved in the cassava value chain, there is a need to redefine market targets and how to produce and transform cassava.
- Markets for the different product segments are not well known and deserve to be exploited for their development potential and special needs.

Pillar C - Mode of organization within the sector

- The support and training provided in the past to the groups did not make any significant changes in quality, quantity and range of marketed products.
- The value chain is not structured to maximize the profits of small producers and processors. Without top-down coordination, it is difficult to improve the efficiency of each link in the chain and, in turn, the income of farmers and processors.
- Women and youth involved in the production, processing and marketing of cassava are not grouped into dynamic organizations.

- Organizations often have few means to assume their role in the sector and require support in organizational capacity building.
- There is much to be done at this pillar to make farmer organizations functional and effective in the cassava sector. The diagnosis of each group chosen by the project to be coached should allow the development of a strategy for training and support to organizational reinforcement that will be adapted to the needs of each group. The development of these groups should be guided by entrepreneurship, leadership enhancement and innovation issues.
- The establishment of production and processing groups such as cooperatives could allow a better organization of production and processing resources to meet the needs of the market.

Pillar D –Support to the development of the sector

- Government, private and NGO-led projects have intervened in different ways to support the development of the cassava sector. Some interventions were aimed at supporting artisanal processing, while others were more targeted at production models to fuel industrial processing.
- Based on the observations made during the mission, the various interventions did not improve the income of small-scale cassava producers. Processing technologies are basic and processing conditions do not allow for the production of quality and hygienic food.
- The cassava value chain does not generate enough income to give women the chance to escape poverty. There are few incentives to attract young people to get involved in one of the links in this value chain.
- Income from cassava production and processing is relatively low and little added value can be generated with existing production, processing and marketing models in the two districts of intervention of the project.
- Support, coaching, training and technology transfer to key players in the cassava value chain within the two districts will be essential and will need to be done in partnership with stakeholders and agencies from inside and outside the region, especially in training, research and technology transfer (e.g. the Food Research Institute, Asuanzi Farming School, etc.). Solutions will have to be found to deal with financial difficulties of government agencies so that they can play their part.
- Mining companies operating in the region could be involved in solutions to support the empowerment of women and youth in production, processing and marketing. They might have annual budgets that can be used in support to local development.

III. Main strengths, weaknesses, opportunities and threats and development challenges

The table on the next page shows the main strengths, weaknesses, opportunities and development threats and challenges.

Diagnosis of the cassava value chain in the project intervention area in Ghana

Strengths	Weaknesses	Challenges
<ul style="list-style-type: none"> • The importance of farming in the two districts • The role of cassava as a staple food in the diet of residents (food security) • The predominant role of women in production, processing and marketing • The possibility of processed cassava products and by-products 	<ul style="list-style-type: none"> • Inadequate supply and technical support to meet the needs of producers • Underfunding and shortage of manpower within Government coaching structures • Stringent loan conditions for purchases of inputs, equipment and land preparation • Difficult access to inputs (improved seeds, fertilizers, pesticides, etc.) • Low utilization of production inputs and effects on yields • Lack of equipment and low mechanization of farming • Low profitability of cassava production and processing • Youth's lack of interest of in the cassava sector in its current form • Industrial markets inaccessible to small farmers • Risk to tuber buyers due to the mode of marketing in the field (yield uncertainty) • Weak organization of players and groups of women in production, processing or marketing • Lack of understanding of the transformation processes and the needs and characteristics of the markets to be supplied • Difficult access to processing technologies for the production of value-added products • Distribution and marketing channels that are not widely deployed outside the region • Lack of a collective structure in terms of market development • Lack of sectorial regional coordination of the cassava value chain 	<ul style="list-style-type: none"> • Improving the adequacy of technical coaching and support from government agencies (technology transfer and training) to increase yields and improve production and processing methods • Facilitating access to agricultural inputs and equipment • Promoting the gradual mechanization of production • Providing conditions for access to loan; Essential element to ensure the development of the sector • Improving the profitability of production and processing activities • Creating youth interest in the sector • Improving the integration of youth and women in the sector • Developing and implementing a strategy for strengthening farmers organizations • Identifying precisely women, youth and farmers needs in terms of training • Offering training adapted to women, youth and farmers involved in the cassava sector in collaboration with partners in the sector • Understanding the value chain and potential products and by-products • Knowing the processing processes and technologies adapted to the project's target groups • Improving knowledge of the market, its needs and its operation • Knowing the value-added market segments and how to supply them in a cost-effective way • Developing a new production and processing model in line with higher value added market needs • Equipping women's organizations with efficient small-scale or semi-artisanal processing units

Diagnosis of the cassava value chain in the project intervention area in Ghana

Opportunities	Threats	
<ul style="list-style-type: none"> • Employment opportunities for women in the processing and marketing sectors • Possible partnerships with research, training and technology transfer organizations • A potentially attractive sector for youth with a renewed vision of production, processing and marketing • Support from mining companies to financing projects to strengthen women and youth in production and processing 	<ul style="list-style-type: none"> • Lack of tangible results from interventions in the past to improve the incomes of small-scale producers and women in the cassava sector • Lack of a program or policy to support and guide the development of the cassava sector • Overproduction of certain product lines and by-products • Lack of resources allocated to the decentralized technical services for the fulfillment of their mandates for coaching and distribution of inputs 	<ul style="list-style-type: none"> • Increasing market incomes for producers and processors • Developing a vision for the development of the cassava sector at the regional level • Bringing together a regional coordination structure for the cassava value chain made up of small farmers, processors and marketers

The Oil Palm Sector

Oil palm is the most productive oil crop in the world, being 10 times more productive than soybean and other oil bearing seeds. Out of the 17 major vegetable oils traded on the international market, palm oil is the most important and accounts for more than half of the global import and export trade of all vegetable oils. Global demand for palm oil is projected to grow with the World Bank estimating that demand in 2020 would require 6.3 million hectares of oil palm plantation and using soybean oil instead would require an additional 42 million hectares.

Oil palm cultivation in Ghana started in the 1960 through state farms. Currently, the total area of land cultivated is at 336,000 hectares out of 1 million hectares of lands available, utilizing only 10% of the potential lands. Four state-owned large scale oil palm plantations were privatized between the 1990s and early 2000s, a move which attracted private foreign investment by multinationals - Unilever, SIAT Belgium, Norpalm Norway and recently Wilmar.

About 80% of Ghana's existing plantations are cultivated by private small-scale farmers who mostly use unimproved planting materials and farming methods. It is also estimated that about 80% of Crude Palm Oil (CPO) is produced from small scale plantation holders and processors, who use inefficient milling machineries and methods.

Oil palm is one of the most organized sectors in Ghana after cocoa. Driven largely by huge industrial demand and some form of competition by up-end processing companies for nuts. Ghana Oil Palm Development Association was established in 1985 as the apex body to implement government programs to promote growth and sustainability of the oil palm industry. It is estimated that Ghana has a CPO deficit of over 35, 000mt annually, producing about 243,852 MT of CPO while local demand is estimated over 295,000 MT annually. Ghana imports over 30,000 MT of CPO annually from Asia with an import bill in the region of US\$300million annually. The present shortfall in CPO supply in Ghana is expected to grow. It is projected that the CPO deficit will hit 127,000 MT by 2024.

The Government of Ghana's vision for the oil palm sector is a holistic one that aims at promoting sustainable growth of the entire sub-sector while taking into consideration the need to promote investment and increase processing capacities; improve marketing; promote sustainable practices for environmental protection; and support research and development. In the quest to improve productivity in the oil palm sector, the government has been implementing interventions with the support of international agencies. Noble among the interventions include:

- 3,000 ha out grower project implemented in the Upper & Lower Denkyira Districts with the support of Agence Française de Développement.
- Expansion of the seed nuts production capacity of Oil Palm Research Institute from 2 million to 5 million seed nuts per year under the World Bank sponsored Agriculture Services Sub-Sector Investment Program.
- Cultivation of over 10,000 ha small-scale farms under the President's Special Initiative on oil palm.

- I. Overview of the sectors including the identification of the actors, actor roles and relationships and institutions. This analysis will be presented within the frame of the four pillars of inclusive markets.

We will discuss the palm oil sector and related value chains using the value chain framework outlined in Section 2. The palm oil value chain in the project districts fits perfectly within the general framework in Figure 3. The focus of our analysis in this section therefore is to highlight the nuances peculiar to the project area that would otherwise be overlooked in country wide analysis. The sector will be analysed using the four pillars for assessing business environment competitiveness.

Pillar A – Production, processing and Support Systems

Production

Oil palm production has evolved over the years from purely state farm to include several actors. Smallholder units produce the bulk of oil in the country and supply both the large estates and small scale processors. Our observation of the production system in the project area is consistent with the Adjei-Nsiah et al, 2012 (Figure 3) description of the sector. The producer system is a mix comprising:

- Smallholder’s farms owned by individuals and families; relying on manually operated and semi-mechanized mills.
- Individually owned medium and large scale plantations with medium scale industrial mills and in some instances with network of out-growers.
- Big palm processing companies like BOPP, TOPP, etc. with large scale processing factories and expansive network of smallholders/out-grower farmers.
- Out-grower schemes implemented by mineral extraction companies as part of their CSR. Under these models, the companies facilitate the provision of technical services and credit facilities to assist smallholders develop.
- Pickers/gleaners of wild oil palm—mostly women who self-process and sell other processors.
- Secondary processors who buy and process crude palm oil into oleum oil used in cooking and baking and other products.

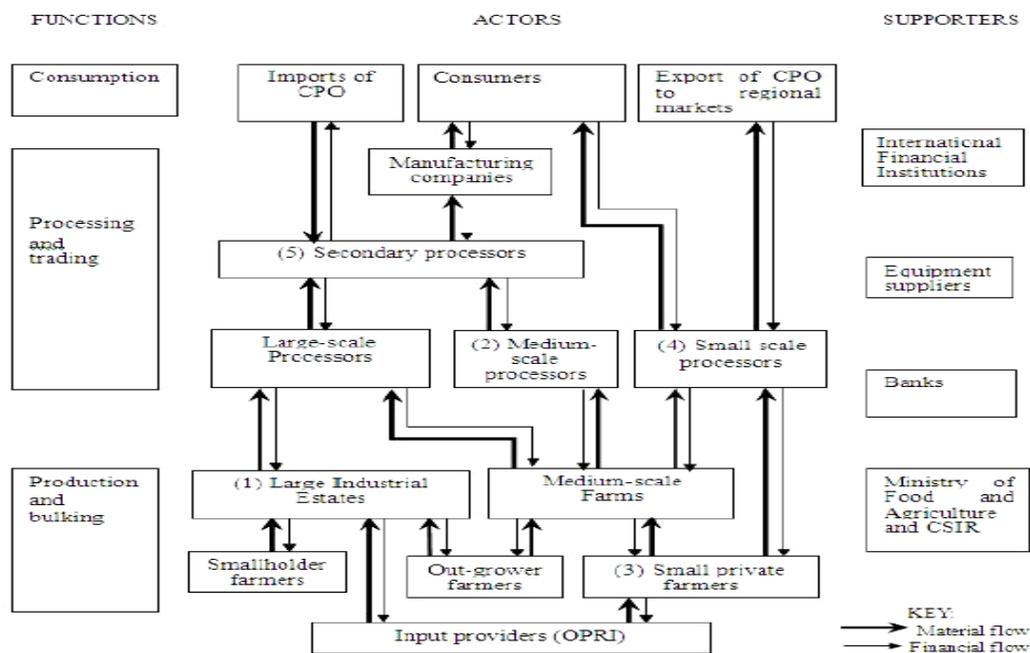
Despite the extensive efforts to improve productivity, the gaps between actual and attainable yields are high. Productivity among the various actors in oil palm production is characterized by wide variation. The large estates achieve productivity levels between 15 and 20 tons/ha while smallholders out-growers produce between 7 – 15 tons/ha. Individually owned small-scale farms obtain the lowest yields, producing only about 5 tons/ha.

The value chain presented in figure 3 highlights some of the key challenges as far as women and youth inclusiveness is concerned:

- Huge investments by corporate oil palm has meant the big estate farms are able to keep pace with the state of the art in technology for production while private smallholders use traditional or obsolete practices.
- Financial flow to smallholders (where youth are located) is mainly from large industrial estates, medium scale farms and small scale processors. This means their share of value is the price of the nut. Our estimates from the factories and buyers suggest primary producers earn between 8%-10% of the value of CPO. Given the volume of production at the smallholder levels, 8%-10% of the value of CPO is not significant enough income to improve livelihood.
- Low overturns from nut sales is serving as a disincentive to many smallholders who prefer to maintain the option to sell on the open market or to plantations depending on the prices on offer. This category of smallholders who operate independently, constitute the private small-scale producers in the value chain.
- Apart from occasional access to planting material, smallholders receive little of other forms of support such as credit from government or commercial banks.
- Fertilizer in combination with other inputs is distributed to farmers by large plantations under their out-growers schemes.
- Effort is not made to diversify the range of activities performed by smallholders. Support services in processing technology and equipment is directed at processors.
- This implies that smallholders in production have no opportunities of benefiting from other forms of value from the palm nuts they produce.
- Smallholders not part out-grower schemes of big estates get limited access to improved technology including seed and advisory services since the MOFA's ability to provide such services is constrained by staff and logistics. This lack of inputs and technical information explains the low productivity associated with small individually owned oil palm farmers.

Figure 3: Actors and Linkages in the Ghana's Oil Palm Sector

Source:
 Adjei-Nsiah
 et al, 2012



Support to Processing

Palm oil plays a significant role in Ghana's culture beyond its use as a food product. It is reported that the significance of palm oil in some instances influence the adoption of varieties more suitable to industrial processing as this would limit their penetration in the domestic palm oil segment (Fold and Whitfield, 2012).

The palm processing sector in Ghana is characterized by competition for fruits between two tiers of the processing system. Medium and large palm oil plantations with milling facilities that process for industrial use in domestic manufacturing and artisanal small scale processors that supply households and other domestic segments.

It is estimated that about 68% of palm nuts is processed by small scale village mills, with a collective share of 55% of the total palm oil production. Medium sized mills and the large commercial mills process 12% and 19-20% of total nuts, respectively. The competition for nuts between large estate plants on the one hand and medium and artisanal processors on the other, was evident in the project area and our projection is that the competition would likely intensify as more and more nuts is used up by a growing medium and small scale processing systems.

Small scale processors account for 80% of total Ghana palm oil production. The vast majority of this 80% small scale processors are women. From the perspective of WAGES, the prospects of including women and growing their earnings is most promising in the processing industry of the oil palm sector.

There is significant product differentiation in the oil palm sector based on the actors involved and technology used in processing. This was evident based on information we collected from the different processing systems, malls and major markets in the project area and big cities. The different processes are:

- Large estate-owned high technology–high efficiency processing systems that extract the best quality of CPO, along with medium scale systems that mostly produce comparable quality of CPO.
- Small-scale processing units characterized by low milling capacity, low efficiency and low quality of the oil produced. This system is dominated by women using manual and physically intensive processing techniques.

In order to be in a position to support women integrate vertically in the oil palm sector, it is necessary to have complete knowledge of the processing system. In this segment of the report, we describe the processing system and put into perspective, product differentiation within the sector which is dictated by technology.

Processing of CPO involves the following activities:

- removal of fruits containing spikelet
- loosening of fruit and storage
- boiling and digestion of fruits
- pressing and clarifying treatments

Different processing methods lead to different grades of CPO and the grade determines which end-products the oil can be used for and by extension the value of the oil. Three grades are distinguishable based on the contents of Free Fatty Acid (FFA) and moisture in the CPO:

Grade 1 oil is produced by large scale and medium scale mills and refined to meet international standards. The FFA content is lowest (less than 5%) and moisture at 0.4% or below. This product is supplied to domestic manufacturing for the production soap, cooking oil and margarine.

Grade 2 palm oil contains FFA levels between 5% –12% and moisture content around 10%. This is mostly produced village small scale mills and other improvised equipment. This grade of oil is mostly used in food preparation.

Grade 3 oil has FFA content exceeding 12% and moisture above 10%. Grade 3 is mostly produced by small scale farmers and artisanal women processors and used as raw material to produce the local soap "alata samina".

The best CPO is produced from fruits processed within 48 hours of harvesting³. Storage for longer periods of time would lead to significant increase in the level of FFA in the oil. This is the key challenge when it comes to small scale artisanal processors particularly women who are the interest of the WAGES project. Working for the inclusion of women and the enhancing of their earnings would require support systems that allow women to process grade 1 CPO.

Pillar B – Market

The objective of this pillar is to analyze the structure of marketing between producers and buyers, different market places for selling products, collective strategies for market development, current and potential role of women and youth, competition, growth potentials, etc.

As in the case of production and processing, the market for oil palm and derived products is highly segregated and largely dictated by the quality of product. The constraint that keeps small scale processors out high end-markets is the inability to keep FFA and moisture content and eliminate impurities in the oil they produce.

The market in the project area consists of:

- Industrial refineries and manufacturing companies that use CPO as raw material. This market is served big estate palm companies like BOPP, TOPP as well as independent medium and large scale plantations with medium scale industrial mills.
 - The quality and price of CPO in this market are the highest.
 - In this market, processing, bulking and trading is well organized with operations heavily supported by companies and financial institutions.

³ CPO processed from nuts sent to the mill directly after harvest is locally referred to as "virgin oil". This CPO commands a premium price.

- Domestic consumption market. The product in this market is of medium to low quality and the buyers are households, traditional caterers, among others who use the product in food preparation:
 - Here the prices are subject to wide variations but are significantly lower than prices paid in tier one.
 - Transportation problems, market and price information as well as poor post-processing capacity in storage and handling further impact on the ability of artisanal processors to command meaningful prices.
 - Financial and technical advisory services are rarely provided to support marketing by small-scale processors.
 - Support to processing in this market is minimal except in isolated instances under projects where funds are provided for training and minor equipment
- Secondary processor market: The buyers in this market are mostly women who use palm oil as raw material to produce the local soap "alata samina" and other derivatives. The market mostly relies on low quality palm oil produced from nuts at the point of rotting. Some poor quality oil from individually owned medium scale mills and rejected by the industrial refineries is sold in this market.
- The deficit in the supply CPO to domestic industrial manufacturing and potentially export market offer opportunities for inclusion of women and youth. That notwithstanding, the strategy to include women and youth must be based on high-productivity, high-earning models. Simply getting youth to establish plantations and supply nuts to large estate processors or facilitating women to process low grade palm oil would not lead real economic development for the targeted demographic groups. The following are required in order to integrate women in the high earnings activities of the sector:
 - small scale processing receive little realistic attention at the policy level despite the fact that they process the largest share of fruit and produce the bulk of palm oil consumed in the country. Upgrading processing facilities at the smallholder level must be a priority in the sector's policy.
 - upscale and mechanize the processing of women to increase their capacity and transform the product they produce.
 - Upgrading of the capacity of women and youth processors coupled with programs to support them acquire appropriate technology adapted to their capacities would significantly improve their productivity and allow them produce the high quality products demanded by the high-end markets.

Pillar C - Mode of organization within the sector

This pillar analyzes the capacity to coordinate and disseminate information within the sector. It focuses, among other things, on how various partners are organized, on business relationships between producers and buyers, the presence of a sectorial development strategy, the role and

integration of women and youth within key coordination organizations, on possible women and youth leadership within these organizations, etc.

Organization within the oil palm sector is largely top-down. The Oil Palm Research Institute (OPRI) of the CSIR acts as the lead source of technology and inputs to the sector. The notable associations within the sector are:

- Oil Palm Development Association of Ghana which was launched in April, 2015 as an umbrella body of producers to support farmers adopt best agronomic practices to boost production to meet the huge demand for oil palm.
- Oil Palm Out-growers Association is an organization of out-growers under big-estate plantations, government and other out-grower schemes.
- Individual farmers and independent medium and large scale farmers are not well organized and mostly form groups only in response to projects and incentive distribution programs. Such groups do not have long-term objectives and are not assertive in their attempts to influence programs in the sector
- There are numerous poorly coordinated small-scale processor groups across the project areas and region in general. They do not belong to an umbrella organization and because coordination among such smallholder groups is poor they are not able to collectively influence input and output prices through collective bargaining
- The oil palm intermediaries who assemble grades 2 and 3 palm oil for sale in major markets appear more organized. They have tried to coordinate their activities by zoning sometimes and also working to make it difficult for non-members to sell palm oil in some markets. In some instances, they are seen to collude in determining prices.

Any strategy on inclusion of women and youth must also focus on horizontal coordination. Building strong cooperatives of smallholders is required for sustainable and effective inclusion of women in particular in the oil palm sector.

Pillar D – Support to the development of the sector

This pillar aims at analyzing the support and guidance provided to the sector to ensure its development and to innovate. It focuses, among other things, on government interventions and programs, development assistance, infrastructure, research expertise, training and more specifically, on programs, services and training that target women and youth and promote their integration and empowerment.

It is evident that the oil palm sector is the most supported in Ghana after cocoa. The problem with the support and incentive structure is the over emphasis on big players which has created a dichotomy between the high input–high productivity large estate plantations and their out-growers on the one hand and independent small-scale producers and processors whose productivity is far below levels observed in the commercial farms.

Even though more general in nature, the current government programme Planting for Food and Jobs is a new policy geared towards the modernization of Ghana's agriculture to ensure food security for the country. The program has five components which will focus on supply of improved seedlings, provision of fertilizers, extension services, marketing for produce and E-Agriculture. The Planting for Food and Jobs program and WAGES economic development program objectives are very much similar. The opportunities the program presents could therefore be leveraged by WAGES working with the District Assemblies and other stakeholders to promote the development of inclusive markets for women and youth.

Our recommendation on how to make the oil palm sector work for women and youth in the project area is similar to what was proposed in the Presidential Special Initiative on Palm Oil 2001. At the core, palm oil was upgrading the rural industry by empowering smallholders. The central idea was to invest in the creation of new mills where smallholders had shares. This idea was rejected by big industry players who did not like the idea of linking smallholders to existing mills with the support of the Government instead of creating new small scale milling facilities.

The oil palm fruit is worth so much more than the price paid to the farmer at the factory gate. If all the farmer gets is a fair nut price, then the sector can be served as the avenue for job creation and poverty reduction.

Policies on enhancing FBOs need to go beyond organizing farmers and processors to facilitate easy distribution of incentives to strengthening of the linkage between smallholder production and industry; improve farmers'/processor's knowledge, skills, and access to resources/advisory services and improve coordination between FBOs for stronger bargaining power in marketing.

II. Key findings from the analysis

This section presents the main findings from the analysis of each pillar.

Pillar A – Production, processing and Support Systems

Support to production

- As part of their social responsibility policies, mining companies support the establishment of plantations operated by farmers. Thus facilitating access to technical advice and loans to support the development of these small plantations.
- Major processors offer consulting services and inputs to producers who produce for them on a contract basis. The cost of inputs is deducted from the price when the raw material is delivered.
- Credit rates are high and financial institutions' confidence towards producers is low. Financing for the purchase of production or processing equipment is therefore unavailable. When it is, the rates are very high. It was mentioned that it was 26% for a six-month loan.
- This situation has important implications for the development of agriculture and particularly on the value chains prioritized in this study. Additionally, this imposes

enormous constraints on the increase of incomes, the intensification of the yields and the development of a sustainable sector.

- Independent producers-farmers have little access to technical advice and inputs. Access to improved seeds and farming equipment is also limited.
- Government technical services offer little support to independent producers given their financial and human limitations.
- Small producers-processors or small processors also have little access to advice and technological innovations.
- Weak support to small independent producers and processors limits their productivity growth and maintains low profitability of their operations.

Production

- Small farms are often characterized by low levels of technology at different stages of production and harvesting.
- There are also producers who operate medium to large-sized plantations and have medium to large-sized processing plants. To supplement their raw material supply, these producers and processors rely on a network of suppliers-producers, many of whom produce on a contract basis.
- There are different categories of palm oil producers, with significant disparities in performance and yields. The largest producers achieve the best yields which is between 15 and 20 tons / ha, while the independent farmers growing small surface areas achieve the lowest yields with a maximum of 5 tons / ha. The latter usually use non-renewed genetic plants and rudimentary farming methods.
- Producers-farmers receive a small share of the income generated by the palm oil value chain. This group does not have market power to influence the price they receive from large oil processors.
- The methodology used by these processors to determine the price of nuts is not disclosed to their kernel producers. They have no choice but to accept the price offered if they want to sell in this market.
- The methodology for pricing kernels should to be reviewed by a third party.
- The price paid by large processors encourages small independent producers to turn to other options for selling their kernel crops. These options are free the market or micro-processing plants. Revenue earned, though potentially higher than that obtained from large processors, remains low.

Processing

- Artisanal or semi-artisanal processing uses rudimentary technologies and is limited to the processing of raw material where supply is relatively abundant.
- It is estimated that 55% of palm oil is processed in small artisanal processing units. The other processors, medium and large, share the rest of the oil production.
- In the project area, there is a growing competition for access to kernels between the three categories of actors: small-scale artisanal processing, medium-size industrial processing and large-scale industrial processing. With the development

of medium-scale artisanal and industrial processing in the area, competition for kernel supply could grow further.

- Women accomplish the majority of artisanal processing, either alone or within groups.
- Large companies / plantations produce oil in modern large-scale factories and rely on a network of contracted or independent producers working on a fixed-price basis to source raw materials.
- The range and quality of processed products differ considerably depending on the process used. Artisanal processing generally uses rudimentary, hardly mechanized technologies, and is limited to processing basic, low quality and unhygienic products. The supply of artisanal products is relatively abundant. Increasing the income and inclusion of women involved in palm nut processing will require appropriate access to technologies for the manufacture of Grade A oil.

Pillar B – Market

Structure and operations of the market

- The palm oil market is segmented according to the quality and use of the product of primary processing. Products resulting from artisanal processing are generally considered as low quality.
- Several challenges prevent small processors from accessing industrial and value-added segments of the market. Among other things, we can talk about the inadequate processing, poor knowledge of the market, poor pre- and post-processing storage, product transportation problems, difficult access to financing and advisory services, etc.
- Palm oil products are widely carried in retail outlets and satisfy different market segments.
- Sustainable inclusion of youth and women in this sector and increasing their income require access to appropriate processing technologies and access to value-added market segments.

Pillar C - Mode of organization within the sector:

Organization within the sector

- The value chain is well organized and structured to support the development of the industrial processing sector. Some organizations play this role at the national level.
- Small independent producers and processors in the area covered by the project are poorly organized. The groupings are numerous, but not very functional.
- There is no regional coordination structure for existing groups of small producer or processor. Individually, they have no market power to buy inputs or negotiate the price of their products. They have limited resources to develop a parallel marketing network.
- There is much to be done in this pillar to make farmers' organizations functional and effective in the palm oil sector. The diagnosis of each group chosen by the project to be coached must allow the development of a training and support strategy

for organizational strengthening adapted to the needs of each group. Issues of entrepreneurship, leadership and innovation should guide the development of these groups. The regional coordination of the selected groups will be essential to obtain the desired market positioning and sustainable results.

Pillar D – Support to the development of the sector:

Policies and governmental programs

- The palm oil sector is an important agri-food sector in Ghana. However, governmental support and policy are mainly targeted towards big players of the industry. Small producers and processors who have significant needs for support are left behind.
- The compatibility of the objectives of the new Planting for Food and Jobs policy with those of WAGES could create synergy within the two districts and thus promote employment opportunities for women and youth.
- Support, coaching, training and technology transfer to targeted key players in the palm oil value chain within the two districts will be essential. They should be carried out in partnership with stakeholders from inside and outside the region, including training, research and technology transfer (e.g. the Food Research Institute, Asuanzi Farming School, etc.). Solutions will have to be found to deal with the financial difficulties of government agencies so that they can play their part.
- Mining companies operating in the region could be involved in solutions to support strengthening women and youth in production, processing and marketing. They might have annual budgets that can be used in support to local development.

III. Main strengths, weaknesses, opportunities and threats and development challenges

The table on the next page shows the main strengths, weaknesses, opportunities, threats and development challenges to the palm oil value chain.

Diagnosis of the value chain of palm oil in the project area in Ghana

Strengths	Weaknesses	Challenges
<ul style="list-style-type: none"> Local presence of numerous buyers of palm kernels Support offered by mining companies for establishing plantations Consulting and financial support provided by mining companies to farmers beneficiaries of plantations The prominent role of women in artisanal palm oil processing 	<ul style="list-style-type: none"> Inadequate supply and technical support to meet the needs of small independent producers and small processors Underfunding and shortage of manpower within Government coaching structures Stringent loan conditions for purchases of inputs, equipment and production and processing technology for small producers and processors Difficult access to inputs (e.g. improved seeds) Small farms' low technological level and rudimentary farming methods High disparities in yields between large plantations and small independent producers Small producers' low bargaining power for obtaining specific price to processors Opacity of the process of defining kernel prices by large processors Low capacity and efficiency of artisanal processing as well as poor quality of artisanal oil Low income from raw kernel or oil for small independent producers and processors Challenges to access value-added market segments for artisanal processors Poor knowledge and lack of training of farmers, women and youth on technical arrangements, management, processing, marketing and loan Weak organization of players and groups of women in production, processing and marketing Lack of collective structure for market development Lack of sectorial regional coordination of the artisanal palm oil value chain 	<ul style="list-style-type: none"> Improving the adequacy of technical coaching and support from government agencies (technology transfer and training) to increase yields and income from palm oil Facilitating access to agricultural inputs and equipment Providing conditions for access to loan; Essential element to ensure the development of the sector Creating interest among youth and women in the palm oil sector Improving the integration of youth and women in the sector Obtaining a transparent process for the kernel pricing by large processors Developing and implementing a strategy for strengthening farmers organizations Identifying precisely women, youth and farmers needs in terms of training Providing training adapted to women, youth and farmers involved in the palm oil sector in collaboration with partners in the field (technical services, district assembly, training center, etc.) Improving knowledge of the market, its needs and its operation Providing women's organizations with efficient artisanal or semi-artisanal processing units that meet the requirements of the market Increasing market incomes for producers and processors

Diagnosis of the value chain of palm oil in the project area in Ghana

Opportunities	Threats	
<ul style="list-style-type: none"> • Potentially accessible value-added market segments • A potentially interesting sector for youth • Employment opportunities for women in processing and marketing sectors • Potential partnerships with research, training and technology transfer organizations • The new Planting for Food and Jobs policy • Support of mining companies in financing projects to strengthen women youth in production and processing 	<ul style="list-style-type: none"> • Growing competition among processors to source raw kernels • Lack of policies or programs targeting small producers and processors • Presence of a well-structured value chain at the industrial processing level • Strong competition from processed products on retail outlets already meeting several market segments • Lack of resources allocated to the decentralized technical services for completing their mandates to supervise and distribute inputs 	<ul style="list-style-type: none"> • Knowing the value-added market segments and how to supply them in a cost-effective way • Bringing together a regional coordination structure for the value chain made up of small farmers, artisanal processors and local marketers

4. Recommendations

Recommendations to increase the development potential of the three value chains taking into account, inter alia, aspects of an inclusive market system.

This section contains recommendations made for the three value chains (rice, cassava and palm oil) studied in the context of this mandate. For each recommendation, we will indicate the value chain concerned by the proposal.

1. Provide conditions for access to credit, which is essential to ensure the development of the three value chains and the consolidation of the role of women and youth

- One of the major constraints to agri-food development is the rural credit system. This system does not favour agricultural investment. With rates of more than 26% per year it is difficult, if not unthinkable, to make an agricultural investment profitable.
- Improving the rural credit system will also require a shift in perception that farmers and groups are bad payers.

What can be done:

Implementing rural credit funds

- a) The short-term solution is already being used by projects in Ghana and if not, it is in other countries such as Guinea. It consists in making a credit fund available to the groups. This fund is used to make loans to members on advantageous terms (e.g. low rate). Reimbursed money is used to fund the revolving fund that is used by the group to create a permanent credit account.

A coaching and training program to educate and familiarize members and farmers on credit and the importance of reimbursement should accompany this method.

Partnerships with other government agencies, projects or programs can be used to implement revolving funds. Mining companies could also be involved.

Bringing changes to the agricultural credit system

- a) The medium and long-term solution is to work to modify the current conditions of the credit system or to create an agricultural micro-credit network in the project area. Implementing this recommendation may require time and resources and from a five-year perspective, results achievement can be slim. However, in order to achieve sustainable results in terms of economic development, the present credit system must be modified. WAGES will have to contribute to this through interventions and discussions with the ministries and loan agencies.

Raising awareness in players and improvement of the delinquent payer perception

- a) An awareness campaign on loan benefits and fallouts could be prepared to generate interest among value chain players. This could be done in collaboration with financial

institutions, technical service agents and projects that have acquired expertise in this niche.

- b) A strategy to change the perception of delinquent payers should be implemented, at least with the groups with whom the Project wishes to collaborate. Such a strategy could be implemented after the organizational diagnosis, at the time of the implementation of actions aimed at strengthening the group.

Training and coaching

- a) A coaching and training program on the use of credit in agriculture should be implemented. Such a program could be developed in partnership with financial institutions, technical service agents and training centers having acquired expertise in this niche.
- b) Training should not be restricted to groups, farmers and processors, but should also be extended to technical staff and loan officers of financial institutions. They may not be familiar with the agricultural sector and its issues.
- c) Awareness of loan agencies is also critical in order to prompt recruitment of agricultural specialists and agro-economists to better serve the agri-food sector.

Statistics and indicators

- a) It will be important, throughout the process, to collect statistics on reimbursement rates in order to change perceptions of the agricultural environment.

2. Enabling the development of rice plantation areas taking into account the land tenure

This recommendation focuses more specifically on the rice value chain. It could also be adapted to the cassava and palm oil sectors, since farmers often have to remit a significant portion of the harvest to owners or landlords (we were told that the equivalent of 1/3 of harvest could be required).

- a) The current land tenure system grants land ownership to community leaders or landowners. Farmers, women and youth rarely have access to ownership of the fields they harvest, which are either leased or loaned. Any land development in a rice plantation requires significant financial and human investments. The annual duration of the loan or lease of land cannot guarantee that the operator will be able to defray the investment. The owner may also resume their rights as an operator on the parcel at any time.
- b) It is essential, in order to encourage putting rice plantations into production, to define terms of lease or loan for periods of at least 5 to 10 years depending on the work and investments made. Other more sustainable options could also be considered, such as the transfer of production rights to the family or group as long as they operate the plantation. This would probably involve a revision of the law,

regulations or at least mentalities. Proposals and arguments will have to be prepared by WAGES.

- c) In the course of these discussions on the land system, the "feudal" type of practice, which allocates a relatively large share of the harvest to the owner / land administrator, could be revisited. This practice helps to keep small farmers in a precarious situation.
- d) The rice sector will need to identify the potential for suitable areas that could be prepared for growing rice. It may be necessary to prepare a land allocation/development program for farmers and groups.

3. Identifying and coaching groups of potentially innovative farmers, women and youth in rice, cassava and palm oil value chains

- The resources available to the project and the time frame for achieving tangible results are limited. In this context, it will be important to identify a number of groups or individuals in production, marketing and processing that may become "showcase" ambassadors. In order to achieve tangible results, these groups or individuals must demonstrate specific leadership skills and be innovative. The number of groups and individuals to be supervised and monitored should be defined according to the capacities and resources of the Project and those of the partners involved.
- Chosen candidates (groups or individuals) could contribute to exposing the potential of the channels and initiating their implementation.
 - b) First, a strategy for strengthening farmer organizations (governance and management) and women and youth processors groups should be developed and implemented.
 - i. Selected candidates will have to undergo an organizational diagnosis (strengths, weaknesses, opportunities and threats) to establish the reinforcement targets.
 - ii. In partnership with various organizations (e.g. decentralized governmental technical services, projects involved in the area, training centers, district assemblies, mining companies, etc.), a strategy and reinforcement actions can be developed and implemented accordingly on the basis of the results of the organizational diagnosis.
 - c) An implementation strategy to support the production sector will need to be organized:

Production

- i. Implementing sector support will involve partnerships in coaching, training and research (e.g. decentralized governmental technical services, district assemblies, projects involved in the area, training centers, mining companies, research organizations, etc.) will have to be established. These choices of partnerships should stem from the needs and objectives sought by the project, a diagnosis carried out among coached organizations, the capacity of the partners to carry out their mandate, the cost estimates of their involvement, etc. The training curriculum could be developed with several partners, but training could be given by a training center in the project area (or outside if it cannot be carried out locally). In our opinion, however, it is essential that the trainer and / or the center have a good knowledge of the agricultural sector and its issues.
- ii. In order for partner government agencies (research and technical services and education / training) to play an effective role, it will be important to investigate their budget availability to carry out the mandates entrusted to them. The project may need to alleviate these financial difficulties by, for example, associating with mining companies or with district assemblies.
- iii. Implementation of a training and coaching program with partners will require the development of memoranda of understanding;
- iv. Because of the assessment of training and coaching needs on the agricultural, technical and financial aspects of rice, cassava and palm oil production, a training and supervision program for women, youth and farmers will have to be defined precisely. Training and reinforcement support for groups and individuals will lead to the development of entrepreneurial spirit. Training topics could cover: accounting management, financial and loan management, development of operating accounts and business plans, technical itineraries, selection and production of seeds (rice), Knowledge and response to market needs (education on market needs), post-harvest management, etc.
- v. Training and peer-to-peer knowledge transfer (other farmers) are effective elements of a capacity-building strategy and should be integrated by involving groups or farmers (youths and women) already identified as ambassadors. This could start as soon as groups are deemed to have reached the level to play this role.
- vi. In assessments carried out with the selected groups and individuals, improvement measures to plantation areas, mechanization of certain tasks and storage may be proposed (arrangement, selection of nets, harvesting equipment, threshing, etc.) to increase the performance and profitability of production. The selected technologies or equipment should first be tested in small plots to assess their technical and economic performance and be used to train farmers. Any proposal for change should therefore involve analysis of economic, technical and financial feasibility, development of business plans and documentation of profitability following implementation. The feasibility of

projects is strongly associated with the implementation of Recommendation #1 on access to loan.

- vii. An input access strategy can be developed with the selected groups and individuals so that they have access to quality and quantity inputs foreseen in the technical itineraries and competitively priced (e.g. bulk purchase, supplier identification, etc.).
- viii. Consideration should be given to developing a model farm and a strategy to generate interest and the establishment of youth and women in rice, cassava and palm oil production.

An implementation strategy for processing and marketing will have to be developed

Processing and marketing

The implementation of this part of the recommendations is similar to that presented for production. However, the training topics may differ.

Before moving forward with a strategy in the rice sector, the emphasis must first be on the development of production. It will be necessary to follow the evolution of the latter and to assess the rice processing needs in the two districts. The processing units put in place by the groups must have a solid foundation of profitability (e.g. sufficient volumes of paddy).

One of the objectives that the project could seek by supporting groups or individuals involved in the processing and marketing of cassava and palm oil (and possibly rice) would be to maximize revenues from the market and thus to aim for optimization of the profits generated by the value chain. This involves the development of value-added products (e.g. palm oil in an attractive format and packaging with perhaps a trademark). Such an approach must be gradual, step-by-step, constantly striving to improve the quality of marketed products, spreading the product range and responding to market or market segment needs. Here again, the selection of groups and individuals is important and should focus on profiles demonstrating leadership skills and innovative spirit.

- i. Based on the analysis/implementation of the recommendations presented below, it would be possible to develop a few functional and efficient Pilot Processing Centers (from an economic, technological and managerial point of view) in the intervention areas of the project. These would be operated by groups of women and youth and would be used to train other groups (peer training). Based on lessons learned and processing and market needs, they could be replicated. Business models developed around the pilot centers should be designed to promote the inclusion of women and youth.
- ii. For both the palm oil and cassava sectors, market research is required in order to understand the needs and the business environment (see Recommendation #4).
- iii. As market needs and requirements become better known, it will be necessary to work with research organizations (e.g. the Food Research Institute) for mapping high-

performing food processing methods that meet the requirements of targeted markets but can be adapted to a model of processing of artisanal or semi-artisanal size.

The process of selecting technologies and equipment should involve full economic, technical and financial feasibility analysis. The results should be compared to the economic performance of current artisanal, semi-industrial and industrial models.

After the implementation of Pilot Projects, operating accounts could be produced to validate their economic and financial performance with the results obtained during the feasibility analysis. Generated data could be used to develop business plans for future projects.

- iv. Training and reinforcement support for groups and individuals should lead to the strengthening of the entrepreneurial spirit of the group and its members. Depending on the assessment of the training and coaching needs of the processing and marketing aspects, the training topics covered could include: administrative financial and loan management; development of business accounts and business plans; post-harvest management; processing techniques, processes and equipment; maintenance and repair of equipment; food safety and hygiene; marketing to meet the needs and requirements of the market, etc.
- v. Training and coaching bodies already involved in the production chain could also be called upon to participate, depending on their expertise in training and coaching in processing and marketing.

A four-year action plan will need to be drawn up, budgets will be developed and funding and coordination will have to be provided for the implementation of the strategy.

4. Improve knowledge of markets and business environment for cassava and palm oil and possibly rice value chains

- Market research will need to be carried out quickly in order to seize market opportunities and increase the value added of processed products. The objectives of these studies will be to know the needs, the size of the market segments, the competition, the distribution channels, the state of the demand, the prices paid, etc.
- Market assessments and tests for product concepts (e.g. format and packaging) should also be carried out with target audiences (e.g. customers in large affluent cities) at appropriate times.
- Market research should include the following:
 - i. Knowledge of sub-value chains in terms of which activities women and youth can perform within the sector or value chain and that can significantly move them along the value chain and raise the value of products and incomes

- ii. The market research must therefore focus on the following in the cassava and oil palm sectors:
 - specific need of the market that local processing could meet
 - seeking knowledge of the competition: whether there is competition and who are the competitors?
 - what is the demand and what would it take to meet this demand?
 - does the target group have the capacity to adapt (use the needed technology and produce and manage the output?)
 - what are the rules of integration? What scale of production is economically viable, technically feasible and socially possible within local contexts?
 - iii. Profitability of various products derived from cassava and oil palm must be determined from the smallholder perspective. This would inform what activities hold potential for economic empowerment of women and youth and are worthwhile pursuing.
 - iv. It is important to find answers to questions such as:
 - Is the price of higher quality products sufficiently encouraging taking into account the difficulty of preparation, costs and skill requirements?
 - Compared with the alternative locally or regionally produced counterparts, is the difference in margins incentive enough for smallholder systems to produce higher quality products.
 - Is it economically efficient to produce the high end products at smallholder and medium scale levels?
2. This analysis is required for all the products associated with cassava and oil palm. Such knowledge would enable us to know which products are well suited for the smallholder level and which require upgrading them. Detailed collection of data of actual production costs and selling prices will be required to obtain a better understanding of potential profit margins (or otherwise) from processing with traditional equipment at the artisanal levels. The study should also include analysis of capital investment costs and depreciation in order to present more accurate data to those potentially interested in investing in cassava or oil palm processing.

5. Promoting regional coordination of cassava, palm oil and rice value chains

The establishment of vertical and horizontal coordination structures, such as cooperatives, could facilitate the coordination of value chains at the local and regional level. Such

organizations could gradually play several roles in acquiring inputs and marketing. They should serve small holder farmers, small processing units and marketing groups. They could be the guardians of the inclusion of women and youth. The choice and type of structures responding to the contexts of the area should be considered.

6. Setting up a market and price information watch

This recommendation primarily targets the palm oil value chain. It aims at improving the bargaining power of independent farmers against large processors and to provide greater transparency in markets operations. A Market and Price Information Watch aims to collect, track and analyze strategic information and data to assess market conditions for a commodity and to estimate the price levels paid at different levels in the supply chain, supply.

7. Documenting the effects of climate change on the production of rice, cassava and palm oil

During the mission, this issue was not always addressed at the meetings. However, this issue had been discussed several times during missions to the other two countries (Guinea and Burkina Faso). It would therefore be important to address the effects of climate change in Ghana particularly on the three target crops in order to identify the effects of climate change in the two districts in order to implement mitigation methods and conduct research to establish adaptation measures.

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